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HISTORICAL FUND
of the
NAVY MEDICAL DEPARTMENT

A committee has been formed with representation from the Medical Corps, Dental Corps, Medical Service Corps, Nurse Corps, and Hospital Corps for the purpose of creating a fund to be used for the collection and maintenance of items of historical interest to the Medical Department. Such items will include, but will not be limited to, portraits, memorials, etc., designed to perpetuate the memory of distinguished members of the Navy Medical Department. These memorials will be displayed in the Bureau of Medicine and Surgery and at the National Naval Medical Center. Medical Department officers, active and inactive, are invited to make small contributions to the fund. It is emphasized that all donations must be on a strictly voluntary basis. Funds received will be deposited in a Washington, D. C. bank to the credit of the Navy Medical Department Historical Fund, and will be expended only as approved by the Committee or its successor and for the objectives stated.

It is anticipated that an historical committee will be organized at each of our medical activities. If you desire to contribute please do so through your local historical committee or send your check direct, payable to Navy Medical Department Historical Fund, and mail to:

Treasurer, N. M. D. Historical Fund
Bureau of Medicine and Surgery (Code 14)
Department of the Navy
Washington 25, D. C.

Committee

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Prevention and Control of Staphylococcus
Infections in Hospitals

Knowledge of the Current Situation

It is clear that throughout the world, in spite of the enormous success of antibiotics (and, as will be mentioned below, to some extent because of this success) there remains an important problem of infections, a problem of special significance for hospitals. This report is concerned with such infections, particularly those caused by the coagulase-producing strains of *staphylococcus aureus hemolyticus*. The most obvious examples are impetigo and more severe infections in children, puerperal mastitis in recently delivered women, burn and postoperative wound infections, and pneumonia in debilitated patients. The *staphylococcus* may also be responsible for osteomyelitis, meningitis, septicemias, empyemas, boils and abscesses, otitis media, paronchia, et cetera.

Disease-producing *staphylococci* frequently implant in the nasopharynx without overt disease, thus producing carriers. Indeed, the *staphylococcus* carrier-rate is a good index of the level of contamination of the environment.

Many hospitals have a serious problem with *staphylococcus* infections, and all hospitals have a potential problem. Information is inadequate as to the incidence of *staphylococcus* infections which are acquired in hospitals, but there is evidence that the number of such infections is increasing.

There appear to be innumerable strains of *staphylococcus* capable of producing infections. Many of these *staphylococci* are susceptible to antibiotics. Some are not. Infections with antibiotic-resistant *staphylococci* constitute the main difficulty. Hospitals are clearly the reservoir of most antibiotic-resistant strains. Strains from the community at large are predominantly sensitive to antibiotics. The strains carried by patients on admission are less frequently resistant than strains which are acquired in hospitals. Patients who acquire these infections in the hospital are potential spreaders of resistant strains to the community after discharge. One of the major factors in the current situation is the widespread use of antibiotics which eliminates susceptible strains of *staphylococcus* and leave uncontrolled the resistant strains.

Certain factors frequently found in hospitalization appear to make patients more likely to acquire such *staphylococcus* infections; (a) routine indiscriminate use of antibiotics, especially for "prophylaxis"; (b) long hospital stay; (c) contact, direct and indirect, with infected hospital patients, staff members, or personnel; (d) crowding and inadequacy of facilities; (e) prolonged operative procedures; (f) prolonged use of continuous parenteral therapy through venipunctures or indwelling plastic tubing.

Certain factors in the host (patient) appear to increase susceptibility to infection: (a) treatment with adrenocortical steroids; (b) physical debility; (c) chronic disease; (d) prematurity; (e) diabetes; (f) bed sores; (g) open wounds or breaks in the skin; (h) chronic pulmonary disease.

Danger of infection seems to be especially great from direct exposure to people infected with the staphylococcus, although exposure to the same organisms in, or on, contaminated equipment, supplies, dressings, air, dust, wall or floor surfaces, linens, et cetera, may be equally as important. The physician, nurse, or other attendant with a boil, paronychia, abscess, or nasopharyngeal infection with a virulent strain is particularly hazardous.

Recommendations

All hospitals should establish Committees on Infections, to devote particular attention to infections which are acquired in hospitals so they may be reduced to the lowest possible minimum.

A. It is suggested that the Committee on Infections include, where possible, a bacteriologist, a pediatrician, a surgeon, an internist, a nurse, and a hospital administrator. The local health officer should be urged to serve as a consultant to the committee. The committee should report periodically to the executive committee of the medical staff.

B. The functions of the Committee on Infections should include at least the following:

1. To establish a system of reporting infections among patients and personnel, such a system being essential to a proper understanding of infections which are acquired in hospitals. The committee should have access to all reports of infections anywhere in the hospital.

2. To keep records of infections as a basis for the study of their sources and for recommendations regarding remedial measures.

3. To distinguish to the best of its ability between infections acquired in the hospital and those acquired outside.

4. To review the hospital's bacteriological services to make sure that such services are of high quality and are accessible either in the hospital itself or in an outside laboratory. Bacteriophage typing, if not available in the hospital, may be sought as needed through official local and state health agencies.

5. To review aseptic techniques employed in operating rooms, delivery rooms, nurseries, and in the treatment of all patients with infections and, if indicated, to recommend methods to improve these techniques and their enforcement.

6. To make vigorous efforts to reduce to the minimum consistent with adequate patient care:

- (a) Use of antibiotics, especially as "prophylaxis" in clean, elective surgery

- (b) Treatment with adrenocortical steroids

7. To undertake an educational program to convince medical staff and hospital employees of the importance of reporting to responsible

authorities when they have skin infections, boils, acute upper respiratory infections, and the like.

8. To establish techniques for discovering infections which do not become manifest until after discharge from the hospital, it being known that such infections are often overlooked because they may not be apparent until several weeks after the patient has left the hospital. Two approaches to discovering such infections are suggested:

(a) An attempt to trace the source of any infection with which a patient may be admitted. For example, if an infant is admitted with staphylococcal pneumonia or a recently delivered mother with mastitis, the hospital where delivery occurred should be determined and informed of the infection so that it can seek possible sources of infection.

(b) Periodic telephone polls on a random sample of discharged patients (particularly recently delivered mothers, newborns, and postoperative patients) to ascertain their state of health and, in case of any indication of infection, to follow them up. Such surveys have proved quite simple and quite valuable. A detailed account of the method is given by Ravenholt and others in the October 1956 issue of the American Journal of Public Health.

Hospital administration should undertake the following measures to assist in the control of infections:

A. Diligent maintenance of the general cleanliness of all areas in the hospital, not simply in those associated with operating rooms, delivery rooms, and nurseries. Other possible sources, such as dust, air pollution (special attention should be given to ventilating and air-conditioning systems and their filters), and floors must also be considered as potentially important factors in the spread of infection. There should be regular inspections of the hospital for general cleanliness.

B. Special studies among staff and personnel to uncover silent carriers of staphylococcus, especially in epidemic situations accompanied by repeated cases traceable to the same organism.

C. Appropriate measures for the treatment of all carriers who persistently show heavy growth of epidemic strains of staphylococcus in nasopharyngeal cultures or who are identified by epidemiological evidence.

D. Transfer of such carriers and personnel with skin infections, boils, acute upper respiratory infections, and the like from locations, such as operating rooms, delivery rooms, food-handling positions, and nurseries to other duty stations in the hospital. Usually such transfers have proved to be sufficient to control the problem, but occasionally, leave of absence for a persistent carrier has been necessary.

Hospitals should initiate or participate in community programs to control infection through cooperation with other hospitals, local medical societies, local health departments, and other groups.

General Comment

Occasionally, an entire hospital, a whole community, or a large area seems to become subject to an epidemic strain of staphylococcus. Why this occurs is not known. Its occurrence, however, points up the need for more general recognition and study of staphylococcus infections.

Among the agencies from which consultation and assistance concerning infection problems may be sought are the following:

(a) The American Hospital Association, the American College of Surgeons, and the American Academy of Pediatrics (especially for newborn infants) which will furnish upon request the names of suitable consultants.

(b) Local and state health departments which, in many instances, have experts on their staffs.

(c) The Communicable Disease Center of the U.S. Public Health Service, Atlanta, Ga., whose assistance may be obtained through local and state health departments.

Valuable background information and discussion about the infection problem can be found in:

(a) Conference on staphylococcal infections. (Symposium) *Journal of the American Medical Association*. 166: 1177-1203, March 8, 1958; (Editorial p. 1205)

(b) Observations relative to the nature and control of epidemic staphylococcal disease. F. H. Wentworth and others. *American Journal of Public Health*. 48: 287-298, March 1958.

(c) New York (State) Department of Health Guide for the prevention and control of infections in hospitals. Albany; 56p illust. 1957.

(d) New York Academy of Science. Staphylococcal infections; a symposium. The New York Academy, 1956. 57-246p. illust., tables. (Annals of the New York Academy of Sciences, 65: 57-246)

(e) The problems of postoperative wound infection and its significance. W. A. Altemeier. *Annals of Surgery*. 147: 770, 1958.

The National Library of Medicine has compiled a lengthy bibliography on staphylococcal infection, which, it is hoped, may be of value to both private and public health physicians who are engaged in combating the increased incidence of antibiotic resistant staphylococcal infection in the home, community, and hospital. The bibliography will be sent at no cost on request to:

National Library of Medicine
7th St. and Independence Ave., S. W.
Washington 25, D. C.

(Crosby, E. L., Prevention and Control of *Staphylococcus* Infections in Hospitals: *Military Medicine*, 123: 146-149, August 1958)

(This bulletin was prepared by the Council on Professional Practice's Committee on Infections within Hospitals, consisting of: Dean A. Clark, M. D., Chairman; William A. Altemeier, M. D.; C. P. Cardwell Jr.; James P. Dixon Jr. M. D.; Maxwell Finland, M. D.; Horace L. Hodes, M. D.; Martha Johnson, R. N.; and Alexander D. Langmuir, M. D., in consultation with Kenneth B. Babcock, M. D. of the Joint Commission on Accreditation of Hospitals; William H. Steward, M. D. of the Public Health Service, and others.)

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Racial Incidence of Coronary Vascular Disease

The etiology of coronary vascular disease—by which is meant coronary atheroma and coronary thrombosis—is as yet unknown. Of the many factors implicated, geographic and climatic environment cannot in any way be responsible. In Cape Town, there is a multiracial community living in the same climate, with each race, in the main, adhering to its own traditional customs, particularly as regards diet, and yet the incidence of coronary vascular disease differs remarkably in each group.

Of the three racial groups, the Whites are mainly descendants of immigrants from Great Britain and Holland and are economically privileged. Their number has gradually increased by natural rise in births, by drift from the country to the city, and by immigration from Europe. Even the patients who attend the public hospital (Groote Schuur Hospital), although representing the poorer section of the White community, earn considerably more than the non-White population.

The Cape Colored community originated mainly from European, Hottentot, and Malay stock, the Hottentot comprising the original indigenous population of the Cape. Only within the last few decades has any Bantu been added. Included in this group is a section of Cape Malays (of Moslem faith) who are said to be relatively pure descendants of imported Malays. From the socioeconomic point of view, the Cape Colored population is intermediate between the Whites and the Bantu. They compete in the skilled and unskilled labor market, and, compared with the Bantu, have a far greater proportion of professional men, although far fewer than the Whites. Like the Whites, they are relatively stable and migrate rarely. They have increased considerably in numbers both by natural increase in birth rate which is higher than that of the Whites and by drift from the country to the city.

The Bantu, as a rule, are lowest in the socioeconomic scale, providing the unskilled and heavy manual labor. Migrating often from the rural areas, their stay in the city is temporary—from one-half to two years—during which time they attempt to save money to meet their own needs and the needs of their homes in the Reserves. However, there are some who have lived most of their lives in the city or have been born there. These approach closest to the Whites in education, employment, and diet. Few, however, have as yet reached the professional class. Their numbers have tended to fluctuate and they have been actively encouraged to return to the Reserves. Their birth rate is high, but the immigration of their womenfolk is definitely discouraged.

During the period under survey, the electrocardiographic service of the Cardiac Clinic included all inpatients and outpatients attending Groote Schuur Hospital, and the 44 inpatient teaching beds of the New Somerset Hospital. Inasmuch as over 99% of the 21,582 records were interpreted by the author, any errors in electrocardiographic interpretation were constant in all racial groups. The same physicians and surgeons see patients of all races and the facilities for obtaining electrocardiographic investigation are equal. The data obtained, therefore, reflect the relative incidence of the disease as it occurs in the Groote Schuur Hospital.

Almost twice as many electrocardiograms were requested for White as for Cape Colored patients (7232:4498), although the hospital and general populations were approximately equal. This suggests that attention is drawn to the heart more often in the White than in the Cape Colored patients and the chief reason for this is the greater incidence of coronary vascular disease in the Whites.

Both in Whites and Cape Colored, over 90% of the cases occurred in patients aged 40 years and older. The peak incidence in Whites was between the ages of 50 and 69 years, the maximum number of cases occurring in the decade 50-59. In the Cape Colored, the peak decade was similarly 50-59, but more cases occurred between the ages of 40 and 49 than between 60 and 69.

The effect of sex on the incidence of infarction is well borne out in Tables. In Whites, during the reproductive cycle (20-49) the incidence in males is four times that of females—when all cases are considered—and up to six times when cases showing infarction (rigid criteria) are analyzed. In the Cape Colored, the figures are two to one and four to one, respectively. The difference in sex incidence is even more striking in the Bantu. No case has yet been noted in a female Bantu in Groote Schuur Hospital, although the figures are too small to have statistical significance. With advancing age, there is a tendency for females to catch up with the males, although at no age in the present series have the two sexes been equal. These figures are in accordance with data published elsewhere. Thus, figures from Minnesota show a far greater severity of atherosclerosis in men than in women. The severity of coronary sclerosis in women increases steadily

from the fourth to the eighth decade, leveling off in the ninth decade. In men, leveling off takes place after the sixth decade. At all ages, atherosclerosis is far commoner in men than in women, although this is most marked between the ages of 50 and 59.

The results obtained in this study show that there is a considerable difference in the incidence of coronary vascular disease in the three racial groups. The Whites far outnumber the Bantu, and the Cape Colored fall between the two groups. Whether this is related to the difference in dietary habits of the three racial groups, however, remains to be proved. Yudkin has recently critically analyzed the evidence. That multiple causes are involved appears clear, and this indicates factors, such as overconsumption of food, reduced physical exercise, smoking, nervous strain, tension, and type of occupation. Friedman and Rosenman analyzed the dietary intake of fat in a group of American men and women and reviewed the data relating to the relative immunity of the American women from coronary vascular disease. Clearly, the factor of sex plays a most important part in the pathogenesis of the disease, and probably this is related to some defect of metabolism in the male. The tremendous importance of sex is borne out by the author's figures which show a consistently higher occurrence in males of all races. Lastly, the role played by intravascular thrombosis in the etiology of atheroma is not yet fully understood. As yet, no information exists on the influence of this factor on the incidence of this disease in the three racial groups studied.

It can be definitely stated that a considerable difference in incidence of coronary vascular disease exists in the three racial groups of Cape Town. No difference in the anatomy of the heart and coronary circulation or in blood coagulation has yet been demonstrated. Certain imponderable factors, such as stress and strain, emotional and physical, are difficult to assess or measure. A parallel difference in diet, however, particularly the amount of animal fat consumed, has also been shown to exist. Whether the two are causally related still remains to be proved. (Schrire, V., The Racial Incidence of Heart Disease at Groote Schuur Hospital, Cape Town. Part I. Coronary Vascular Disease: Am. Heart J., 56: 280-288, August 1958)

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Change of Address

Please forward requests for change of address for the News Letter to: Commanding Officer, U. S. Naval Medical School, National Naval Medical Center, Bethesda 14, Md., giving full name, rank, corps, and old and new addresses.

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Intrapulmonary Hematoma

In recent years, the problem of solitary circumscribed pulmonary nodules has attracted much attention in the medical literature. The difficulties involved in establishing an accurate diagnosis in cases of this kind are well recognized and are usually resolved by resort to exploratory thoracotomy and excision of the lesion. That this approach to the problem is rational and well founded is amply substantiated by the many excellent reviews on the subject which have established an incidence of malignancy in such cases varying from approximately 7 to 74% and averaging about 37%. The major portion of this group is comprised of primary bronchogenic carcinoma, while metastatic tumors and other primary malignant diseases, such as bronchial adenoma, sarcoma, or lymphoblastoma make up a much smaller component. Nonmalignant lesions which most commonly present as isolated pulmonary nodules are tuberculomas, granulomas of nonspecific origin, hamartomas, histoplasmosas, and coccidioidomas. In addition to the above disorders, there is a great variety of less common and even rare conditions which may assume the form of "coin" lesions and with which the physician must be familiar if he is even to consider the correct diagnosis prior to surgical exploration of the chest. To mention some of these diseases—chronic organized pneumonitis, lung abscess, bronchogenic cyst, pleural mesothelioma, lipoid granuloma, neurofibroma, pulmonary infarct, encapsulated pleural effusion or empyema, blastomycosis, cryptococcosis, hemangioma, hydatid cyst, fibrin body, and brucellosis may all appear as solitary circumscribed pulmonary nodules.

This report adds to the list another condition which hitherto has received little attention, that is, intrapulmonary hematoma. Persistent, circumscribed, intrapulmonary hematomas must be either extremely rare in occurrence or generally unrecognized if one can judge from the few cases which have appeared in the literature.

Although a number of authors have briefly described or referred to hematoma formation in the lung, the roentgenographic changes produced by these lesions have been variously indicated as "spindle-shaped" or "ill-defined" and have not presented the sharply circumscribed, round, or oval appearance of the so-called "coin" lesion. Only the three cases reported by Salyer, Blake, and Forsee and the single case mentioned by Condon fall into this category.

Results of trauma to the lung or pleura are usually easily recognized. A clear-cut history of injury, either penetrating or nonpenetrating, is seen in the form of rib fractures or contusions of the chest wall. If these findings are further associated with the typical roentgenographic appearance of hemothorax, pneumothorax, or pneumohemothorax, it is easy to ascertain that injury to the pleura has occurred.

Violence to the chest may also injure the pulmonary parenchyma without apparent evidence of pleural perforation. Roentgenographic findings

are less characteristic in such cases, but usually reflect the results of hemorrhage and edema within the lung substance. Areas of diffuse infiltration or consolidation are seen, sometimes associated with an atelectatic component resulting from intrabronchial bleeding. The nature of these findings is further clarified by their tendency toward prompt regression during a period of a week or more.

Where the intrapulmonary bleeding is localized and becomes sharply circumscribed into the form of a solitary hematoma, the diagnosis becomes less certain because this type of lesion may be clinically indistinguishable from a primary bronchogenic carcinoma or any other condition which can assume the appearance of a "coin" lesion. In spite of a history of trauma, the presence of rib fractures or evidence of other injury to the chest, the physician is now confronted by an indeterminate pulmonary lesion, the exact nature of which can be established only by resort to exploratory thoracotomy. This was the situation in the cases reported by Salyer et al, and in the patient described by the authors.

Because all of the sharply circumscribed intrapulmonary hematomas thus far reported have been surgically excised, little is known of their ultimate fate. In describing poorly defined hematomas of the lung secondary to blast or nonpenetrating injury, McGrigor and Samuel state that resolution of the lesion may take as long as 6 to 8 weeks. Blair indicates a similar course for hematomas of this type. In 1950, Welkind reported what was probably the first case of a sharply circumscribed pulmonary hematoma to appear in the medical literature. The lesion was described as a "tumor-like shadow consisting of two spindle masses which fused at their axillary ends." Resolution gradually took place over a period of 13 months, leaving two persistent linear scars. The author believed it to be "inconceivable that a simple hematoma would take 13 months completely to resorb," and postulated that the lesion was associated with an element of infarction or that it was possible "some sort of thick capsule formed around the clotted blood, retarding the resolution."

As Welkind postulated, it is undoubtedly the cyst formation which accounts for the persistent nature of these lesions. Just how long a well organized encapsulated hematoma might remain unchanged within the lung is still a matter for speculation.

Pulmonary hematomas of this type appear to be distinctly rare, but should be considered in the differential diagnosis of isolated discrete nodules of the lung, particularly if there is a prior history of chest trauma or evidence of rib fracture. Even though the nature of such a lesion is suspected, exploratory thoracotomy will usually be required in order to establish the correct diagnosis. (Buechner, H. A., Thompson, J., Circumscribed Intrapulmonary Hematoma Presenting as a "Coin" Lesion: Dis Chest, XXXIV: 42-52, July 1958)

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Syphilis Today

Suspension of publication of good American sources of information on syphilis and the other venereal diseases and the dropping of "syphilology" from the titles of departments of dermatology in many medical schools and from the names of well established societies are all signs of the times.

Undoubtedly, penicillin therapy has played no small role in this decline of syphilis and the interest in it as a disease. It is contended that, because penicillin treatment is so safe and effective, the fine points of diagnosis and differentiation of syphilis from other diseases may be dispensed with and that no harm will come from the wholesale—almost indiscriminate—use of the drug. Already, the effects of this philosophy are becoming apparent. Penicillin is capable of causing reactions, even fatal ones. Certain patients with syphilis actually go through various clinics, including dermatology, without the nature of their disease being suspected for some time. The result also is that medical students have no opportunity to learn about the diagnosis of this disease. Failure to employ serologic tests for syphilis leads to loss of diagnostic advantage in early lupus erythematosus. In addition, here and there, actual increases in the syphilis population are noted, while, in general, there is a definite sustained reduction in the incidence of this infection up to a certain point. Although many advances have been made, there are still numerous unanswered problems connected with syphilis as well as with the other treponemal diseases. Despite progress made in reducing the mortality from syphilis, it still remains one of the more important causes of death among infectious processes.

In spite of all that has been said, syphilis must still be contended with. In this discussion, the author indicates that syphilis is recurring in many places all over the world, although the net result is still to the good. Because penicillin has made it possible for the first time to cure syphilis, the attitude toward this problem has been somewhat changed. Also, the question of relapse and reinfection needs further elucidation. Thus, 13 years after the introduction of penicillin, the author discusses briefly: What has penicillin done? Is syphilis dead? What is the evidence for or against this? What are still problems in syphilis and what is the future of syphilis?

The passing of the diagnosis and management of syphilis from the hands of a few—usually dermatologists—to physicians in general is more apparent now than in the past. This trend carries with it an obligation of which the practitioner may well be cognizant. This includes careful examination before therapy and careful post-treatment follow-up study, as well as case finding, if the best interests of the public health are to be served.

Rosahn's study of the adverse influence of syphilis on longevity has given practitioners something to think about. All of this did not deter organizations from manifesting a lessened interest in syphilis or the other venereal diseases to the point that a belief swept the community that these diseases

no longer constitute a danger to society or a challenge to medicine. This was due to publicity, to a steady decline in the early manifestations of the once fulminating disease syphilis, and to the effects of therapy with arsenicals and penicillin which, in turn, have done much to modify the disease and to set up further waves of optimism. It would be unrealistic to predict the swift eradication of a disease as complex in its clinical and epidemiological aspects as syphilis. Yet, the statement "the long-term trends in the incidence of syphilis have not been altered by antibiotic therapy" would be almost equally unrealistic.

Syphilis (and the other treponematoses) still are an important world public health problem. In 1955, it was estimated that there were about 20,000,000 persons with syphilis in the world and that in special areas of certain countries as many as 80% of the population were probably affected. There was wide variation within countries in the prevalence of venereal disease. In Africa as a whole, it ranged from 14.1% to 32.9%; in southeast Asia, from 0.6% to 31%; in Egypt, from 0.29% to 27%; in India, from less than 1% to 50%.

In 1955, Rein regretted the lowered index of suspicion on the part of physicians who believed that venereal disease may be eradicated if proper measures were taken. Already, in 1955, in some areas of the United States, the clinical incidence of early infectious syphilis was no longer falling; in 1956, the Third Annual Joint Statement of the Status of Venereal Disease Control in the United States continued to urge increased Federal support of state and local venereal disease control programs, increased attention on the part of the Federal Government to venereal disease problems of migrant labor, collection of information and development of a program to prevent venereal disease among teenagers, and Congressional appropriation of \$5,000,000 for Federal assistance to states.

At present, there still seem to be conflicting data with respect to the incidence of syphilis and the need for its control, one group reporting a falling trend and the other maintaining that syphilis is still here. In the past year, however, certain evidence indicates that syphilis has not been conquered. For example, in New York City, Rosenthal and Vandow indicated that, although the number of newly reported cases per 100,000 population in 1954 was about half of what it was in 1938, there were still about 20,000 newly reported cases in 1954. In fact, in the United States as a whole, 156,000 new cases of syphilis were reported in 1953.

Although it is true that the number of cases of congenital syphilis has significantly decreased, there has been a much more gradual fall in the incidence rates of early, late latent, and late syphilis. Further reductions in incidence of venereal disease will be difficult to achieve in an area such as New York City which is not only a focal point for traffic from all parts of the United States, but also is a global seaport and airport. Population movement from within the country combined with increasing international traffic

constitute problems beyond any local public health control. These and other factors peculiar to a large metropolis indicate the need for maintaining a vigorous program for the continued control of venereal disease.

Porter claims that, in the State of Delaware, there has been an increase in the reports of new infections since 1952; that there must still be a sizable reservoir of cases which have not been detected or adequately treated. He believes that the battle against syphilis is not yet won. Some increases in the incidence of syphilis have been noted in Ohio by DeOreo, and in New Jersey—especially in the teenagers. Parker of Nebraska, while recognizing the decreased total incidence of syphilis, feels that the venereal disease problem has not been solved. He, too, calls attention to the increase in venereal diseases among teenagers. Dennie believes that both the medical profession and the laity must be reacquainted with the fact that syphilitic disease is still a formidable factor in the list of contagious diseases in this country. Millions of people are still suffering from this disease. New cases run into the hundreds of thousands each year. In order to control syphilis and gradually eliminate it as an important factor in the health problems of the United States, a system of education must be carried on, not only continuously, but more intensely.

Fiumara, Appel, Hill, and Mescon who have reviewed the present status of syphilis and its management reiterate that the venereal diseases are again on the rise and that syphilis is still a nationwide problem. This means that a reservoir of infectious syphilis exists in most communities. There is also a residuum of noninfectious syphilis. All of these data indicate that syphilis will be a serious medical problem for many years. In Pennsylvania, a 13.4% increase in the number of new cases of venereal disease was reported for the State in 1956 as compared with 1955.

An editorial in the New England Journal of Medicine points out that, here and there, small epidemics of syphilis were reported during the fiscal year July 1, 1955 to March 31, 1956. More cases of primary and secondary syphilis were reported in the United States than in the corresponding period of the previous fiscal year. The indications are that the control effort is unable to cope with the national problem of syphilis. Because the increases in both sexes were found in 20 widely scattered states among both Negroes and whites, and were characteristic of both private and public treatment sources, they may well forecast large increases in infectious syphilis throughout the nation. Massachusetts—an area of low syphilis population—had a 20% increase in syphilis in 1951, principally in the late and latent phases. These reported rates continued without significant changes at this elevated level until the present fiscal year when another and sharper increase was noted. There was a 59% increase in primary and secondary syphilis and a 14% increase in early latent cases over the previous year, making an overall increase of 30% in infectious syphilis. Late latent and late syphilis increased by 17%. The years of complacency are bearing bitter fruit.

In the Fourth Annual Report on venereal disease problems and programs, it is contended that states, territories, and cities cite no substantial improvement in their programs over last year; a definite worsening of the venereal disease picture is claimed in selected areas for the country as a whole. This report was prepared by three national organizations and is based on separate reports from all 48 states, from 3 territories, and from 94 of the 109 cities in the United States with populations of 100,000 or over. It was revealed that rates are rising statewide in 19 states, that control programs are inadequate in 35 states, that teenage venereal disease is increasing in 11 states, that new epidemiologic outbreaks are reported in 19 states, and that Armed Forces personnel, transient laborers, and other mobile groups are listed by 32 states and 15 city health officers as major problems in venereal disease control.

Rein summarized the syphilis problem of today. He stated that syphilis is on the rise again. A Public Health Report estimated that 1,921,000 persons in the United States have syphilis requiring treatment. Many states and large cities find their venereal disease appropriations inadequate to permit an effective and progressive program. Of major concern, is the fact that high rates for primary, secondary, and early latent syphilis are in the age group of 15 to 19, reaching a peak at the 20-24-year group. Rapidly declining rates over the past several years have prompted the optimistic demobilization of venereal disease control forces, reassessments of personnel and reduction of case findings, and reduction of diagnostic and treatment facilities, leaving many areas without means to discover cases or to combat sudden outbreaks. (Beerman, H., The Problem of Syphilis Today: *Arch. Dermat.*, 78: 174-179, August 1958)

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Cancer of Rectum and Colon

While great advances have been made in colonic surgery, there has been only slight improvement in the number of patients cured of cancer of the rectum and colon. A reported 30,000 individuals die annually from this disease.

The authors believe that greater emphasis must be placed upon early detection of this disease while it is still localized to the bowel wall and is thus amenable to cure by the accepted radical surgical procedures. The frequency of malignant disease of the bowel is higher in people with a family history of intestinal malignancy and also in those who have already had carcinoma of the bowel. Such persons should be observed carefully and periodically for evidence of neoplasm of the bowel, even though symptoms of such disease are not present. It is equally important to detect and eradicate the precursor of cancer of the bowel—the adenomatous polyp.

Generally, it is assumed that the end results for cancer in this organ are reasonably satisfactory. Review of the literature, however, reveals a considerable discrepancy in reported figures, varying from 10 to 50% for 5-year survival rates. The national average probably is about 22%. This is the recorded future obtained from representative groups and persons collaborating for the Third National Cancer Conference in Detroit in 1956. The California Tumor Registry reports a 20% 5-year nonrecurrence rate. This means that only one patient in five is cured. Compared with the end results of treatment of cancer of other organs, this figure is not too unfavorable. However, this average is well below the result that could be obtained if every facet of cancer control now available were utilized by all physicians.

Numerous pathological studies—especially those by Dukes, and Gilchrist and David—have clearly shown that when the lesion is still localized to the bowel wall, the 5-year survival rate is 80% or better. When, however, there has been extension beyond the bowel wall to the lymph nodes, this percentage is reduced by half. Unfortunately, a majority of cases coming to surgery fall in the latter group.

At present, there is an average delay of 9 months between the onset of symptoms and definitive surgery. Physicians and patients alike share the responsibility for this delay. Although many determining factors are involved, every effort should be made to avoid delay in the diagnosis of this disease because there is no predictable time when the individual lesion becomes incurable.

The authors suggest several ways in which carcinoma can be detected in an earlier stage. These suggestions are: periodic examinations of those over 40 years of age; bowel examination when there is a family history of intestinal malignancy; lifetime follow-up on all patients with neoplasm of the bowel; and prompt and adequate examination of all patients with rectal bleeding to establish the source.

Periodic Examination of Those over Forty Years of Age. Most physicians are seeing an increased number of patients for an annual check-up examination. The nature of such an examination varies considerably with each physician and depends upon the time available and certain economic limitations. Routine proctoscopy in the absence of symptoms is seldom carried out as part of such an examination, but this examination offers an unusual opportunity to detect early cancer in an accessible organ that is frequently involved with this disease. Of equal significance is the opportunity to discover and eradicate a precancerous lesion, that is, an adenomatous polyp which is the precursor of most—if not all—intestinal cancers.

Many studies have revealed an adenomatous polyp in about 10% of persons examined. A small percentage of such polyps already have developed early malignancy and a very high percentage of such patients have been cured by accepted surgical procedures. Persons in whom proctoscopic examination reveals a polyp should undergo roentgenologic examination to

determine if there are polyps present in the abdominal colon. In the authors' experience, such additional polyps have been found in one of six patients examined.

Bowel Examination when there is a Family History of Intestinal Malignancy. While generally accepted that human cancer is not inherited, experience indicates that the incidence of malignant or premalignant neoplasm is considerably greater in those persons with a family history of intestinal cancer.

It is suggested that all members of the immediate family of a patient with intestinal malignancy be examined for the possibility of an intestinal neoplasm being present and periodic observation continued.

Lifetime Follow-Up on All Patients with Bowel Neoplasm. Every patient who has had cancer of the bowel should have a lifetime follow-up because of the possibility of developing a second carcinoma; the chances are one in ten, which is 100 times greater than in the average adult. Realization of this increased potential should be an incentive to look for early asymptomatic carcinoma while it is still localized. Similarly, every patient who has had a benign polyp should have a lifetime follow-up in order to detect others that might arise. Destruction of such lesions—when confined to the mucous membrane—is a relatively simple procedure and may avoid a far more radical operation.

Prompt and Adequate Examination of All Patients with Rectal Bleeding to Establish the Source. It is especially true that the fate of such patients often rests with the first physician consulted. Too frequently, after external inspection and digital examination, the patient is falsely reassured until the further passage of time makes it obvious that further study is indicated. All patients with a history of having passed blood per rectum require sigmoidoscopy to detect a neoplasm beyond the reach of the finger as a source of bleeding. This is equally true even though bleeding is infrequent or trivial in amount.

If no adequate explanation of bleeding is found, roentgenologic examination of the abdominal colon is required. It should be unnecessary to remind any medical audience that a negative barium enema in no way rules out neoplasm in the rectum. Air contrast studies are unquestionably more satisfactory than ordinary opaque x-rays in detecting intraluminal polyps. All patients—if bleeding continues—are requested to return without preparation for repeat sigmoidoscopy to determine more accurately if bleeding is coming from beyond the reach of the proctoscope. When bleeding continues and can be demonstrated to be coming from a higher level, exploratory laparotomy is indicated in spite of repeated negative x-ray studies. The diagnostic accuracy of barium enema examination is not more than 90% for well established carcinoma and less accurate for adenomatous polyps. (Klein, R. R., Scarborough, R. A., Improving the End Results in Cancer of the Rectum and Colon: *Am J. Surg.*, 96: 331-335, August 1958)

Early Exploration of Vascular Injuries

In this article, the importance of exploration of all penetrating wounds which occur in the vicinity of large vessels is emphasized and evidence to support this point of view is presented. The cases are grouped in three categories. Those cases in which the major injured vessels were arteries are grouped as arterial injuries. Although frequently the accompanying veins were also injured, the arterial injury was considered the most significant. Grouped under venous injuries are those cases in which at exploration the major injury was to a large vein. In the third group of cases are those in which exploration revealed no injury to either major arteries or veins.

From October 1948 to October 1954, only 17 explorations were carried out for suspected arterial or major venous injuries. In 11 of the 17 cases, exploration revealed significant injuries to arteries or large vessels. There were 15 cases of arteriovenous fistulas and traumatic aneurysms seen during this period. Emergency treatment was performed at this hospital (Homer G. Phillips Hospital, St. Louis) for the initial injury in 12 cases and surgical exploration in 1 case. Of the remaining 2 cases, no initial care was given in one and conservative treatment at another hospital in the other case.

However, since 1954, 66 explorations have been carried out with significant injury to vessels found in 47 cases. Since 1954, there have been only 2 patients with arteriovenous fistulas and 1 with traumatic aneurysm admitted to the surgical service—all of which resulted from lack of initiative on the part of the patient in seeking immediate attention. One presented himself 6 days after injury with a false aneurysm of the left anterior tibial artery. Another presented himself 7 years after having been treated conservatively for a stab wound of the thigh. The third patient presented himself 25 hours after having sustained a gunshot wound of the elbow which resulted in an arteriovenous fistula and a false aneurysm of the brachial artery. Since 1954, the authors have not observed an arteriovenous fistula or a false aneurysm resulting from injuries to vessels in individuals who presented themselves for early initial care. They believe that this is due to an insistence on exploration in all patients with evidence suggestive of major vessel injury. The eradication of arteriovenous fistula and false aneurysms resulting from trauma is an obtainable end. These serious complications can be markedly reduced or prevented by early exploration for potential vascular injuries.

When indications are clear, there must be no hesitation in exploring systematically the areas involved. When indications are doubtful, every effort should be made to establish the presence or absence of vessel injury.

The authors recommend that all penetrating wounds in the vicinity of great vessels be immediately explored or arteriograms performed to exclude arterial injury. It must be remembered, however, that negative arteriograms do not exclude the presence of major venous injury.

Ligation of major vessels is undesirable and—when performed—may result in serious complications with subsequent major or minor disability.

The immediate restoration of injured arteries by resection of damaged areas and primary repair with simple suture or the use of autografts or homografts, is stressed to achieve the best results.

Infections should be avoided if at all possible by aseptic technique and the use of antibiotic therapy. (Sinkler, W.H., Spencer, A.D., The Importance of Early Exploration of Vascular Injuries: *Surg. Gynec. & Obst.*, 107: 228-234, August 1958)

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Prosthetic Restorations Associated with Abnormal Jaw Relations

Maxillomandibular relations which involve deviations from the normal occur with considerable frequency and often are associated with challenging diagnostic and treatment problems. These abnormal conditions may occur in such gross form as to be obvious immediately or they may be so subtle that they defy detection against all but the closest scrutiny. Similarly, physiologic reaction to the abnormalities may range from complete absence of symptoms to conditions of such severity that pathologic conditions of the oral structures or temporomandibular joint are demonstrable.

Among the direct reactions attributed to the malrelationships are retrograde periodontal processes and displacement of the condyles within the fossae. The latter condition has been claimed to produce such symptoms as tenderness, crepitus, clicking, subluxation, pain, tinnitus, and dizziness. Muscle tensions, deafness, and various reflex responses throughout the body are also said to result.

Regardless of the nature of magnitude of the abnormality, all treatment procedures are based on the same fundamental considerations of anatomy, physiology, and other sciences related to the chewing mechanism. Although many abnormal jaw relationship problems are treated successfully by general operative dentistry procedures, some require treatment within the specialties of dentistry. For instance, certain conditions which involve periodontal pathologic changes associated with traumatogenic occlusal disharmonies are treated best by the periodontist. When changes in tooth positions are indicated, the orthodontist renders treatment most effectively. Occasionally, the correction of gross abnormalities may demand the talents of the oral surgeon. This article discusses certain situations which are of special concern in the field of prosthodontics.

Although countless abnormal situations occur, a high percentage of the conditions which the prosthodontist is called on to treat fall into four groups which show the following typical relationships:

1. Upward and backward displacement of the condyles due to cuspal disharmonies or loss of posterior tooth support.
2. Acquired mandibular prognathism, usually with overclosure and such poor occlusion that there is no proper interdigititation of the posterior teeth.
3. Deep anterior overbite due to overeruption of the anterior teeth.
4. Deep anterior overbite due to undereruption of the posterior teeth.

Various combinations of these conditions may occur and each may be associated with some degree of lateral displacement. Unusual situations are encountered occasionally, such as anterior and lateral displacement on one side with posterior and lateral displacement on the opposite side.

In all instances, the condition should be analyzed in the manner suggested by Thompson and Craddock.

When the choice is available, fixed restorations are preferred to removable appliances because the fixed restorations reproduce tooth contours more naturally and minimize the hazard of caries. However, fixed restorations do not permit as wide dispersal of masticatory forces as do removable appliances with rigid connectors. This is particularly true where crowns are lengthened to increase the vertical dimension of occlusion.

When removable prosthetic appliances are indicated for temporary or prolonged use, protective measures are required to prevent decalcification of the enamel, especially where overlays cover the teeth. Recontouring of irregular tooth surfaces and preventive odontotomy may be indicated before final impressions are taken. The twice-yearly application of a suitable fluoride solution may be advantageous. Above all, patients must be impressed with the necessity for meticulous care of the teeth and appliances.

The similarity of certain temporomandibular joint and malrelationship problems permits grouping for diagnostic and planning purposes. Corrective procedures, however, must be based on specific biologic and physical requirements and limitations of the individual case. Treatment should be undertaken only when these factors are clearly understood.

The objectives of treatment are attained largely through establishment of an occlusion which is in harmony with centric relation at a physiologically acceptable vertical dimension. (Frechette, A. R., CAPT DC USN, Prosthetic Restorations Associated with Abnormal Jaw Relations: *J. Am. Dent. A.*, 57: 210-220, August 1958)

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Parathyroid Crisis

Sudden death from hyperparathyroidism is not common. It can be prevented. Just as thyroid storm is a fulminating increase in the manifestations of hyperthyroidism, the majority of instances of parathyroid crisis occur as acute exacerbations of chronic hyperparathyroidism. Two major factors have been suggested which precipitate a crisis: high calcium intake, as in an ulcer regimen where antacids containing absorbable calcium are used, and immobilization which increases the rate of skeletal demineralization. The end result is an abnormal increase in serum, urinary calcium, and phosphorus followed by a rapid death. The mechanism of death is, presumably, cardiac poisoning by calcium with cardiac arrest in systole.

This disease is often misdiagnosed or overlooked completely, yet it can be diagnosed rather easily and a cure almost assured. A thorough understanding of parathyroid crisis is necessary, therefore, if this disease is to be recognized and treated in time.

The case presented is typical of the 22 previously reported instances of parathyroid crisis. In virtually all of the reported cases, an acute episode was superimposed on chronic hyperparathyroidism evidenced by kidney stones or metastatic calcium deposits and bone changes. It is thought that kidney stones or calcium deposition may precede bone changes by several years.

Eighty-six percent of the cases of hyperparathyroidism are due to functional adenomas. All but 3 of the 23 reported cases of parathyroid crisis were due to parathyroid adenomas. Of these 3 cases, 1 was caused by overdosage with parathyroid extract; another was due to a parathyroid carcinoma; the third was reported as frank hyperplasia. Virtually all cases of parathyroid crisis, therefore, are due to adenomata; these usually are solitary.

The acuteness of onset of symptoms is the one distinguishing clinical feature between parathyroid crisis and ordinary chronic hyperparathyroidism. The diagnosis, therefore, must evolve from the same diagnostic criteria as apply to hyperparathyroidism in general. Vagueness of symptoms is characteristic of hyperparathyroid disease and often results in many overlooked or misdiagnosed cases.

Pain is an almost constant feature of impending crisis. Fifteen of the 23 cases had abdominal pain in varying degrees. This ranged from mild discomfort to the severe incapacitating type resembling renal colic or other acute abdominal disease. Chest pain and aches misinterpreted as cardiac, rheumatic, or arthritic in origin, are fairly common. In 14 recorded cases, bone pains were noted. Some of these pains were related to fractures; some to severe backache; others to exquisitely tender areas usually in long bones.

Equally constant are the anorexia, nausea, and vomiting which are manifestations of this disease. Some additional clinical features may help

to identify this disease. Often, there is a disproportionately high pulse rate in spite of increasing drowsiness. This, plus high fevers of unknown etiology, was recorded in over 50% of the cases. Constipation was observed in one-third of the cases. "Band keratitis," which Cogan describes as calcification in the superficial layers of the cornea, may be present. Also, calcium deposits in the conjunctivae and palpebral fissures are occasionally seen. Mental aberrations and even psychoses are fairly common findings and often mask the underlying disease.

Undoubtedly, the next most important diagnostic feature after the physician's high index of suspicion and diagnostic agility, is elevation of the serum calcium. A serum calcium of 17 mg. %, according to Albright, is the critical level above which the symptoms of parathyroid crisis may be expected to ensue. At these exceptionally high levels of serum calcium, the serum inorganic phosphorus also tends to rise because it can no longer be excreted by the kidneys. This is an extremely grave prognostic sign and immediate measures should be taken to reduce the serum calcium. Albright describes the danger signals of parathyroid crisis as rising serum calcium, phosphorus, and NPN levels, and a sharp fall in urine volume. Because an elevated urine calcium accompanies hypercalcemia, a good easy preliminary examination is the Sulkowitch test which is always positive in hypercalcinuria. If the patient is in parathyroid crisis, the serum analysis will enable the physician to make definite diagnosis.

Surgical extirpation is the treatment of choice at the present time. Six of 23 cases were completely relieved when the parathyroid adenoma was removed. As most of the patients in parathyroid crisis are dehydrated, James and Richards suggest hydration with isotonic saline before surgery to minimize hypochloremia. They also recommend that pressor agents be given to prevent shock preoperatively. The use of chelating agents may prove effective by a transient lowering of the serum calcium to maintain the patient during the emergency period until surgery can be performed with safety. Agents, such as edathamil are under experimental study, but severe internal hemorrhages and renal tubular necrosis have hampered their extensive use to date. (Hewson, J. S., Parathyroid Crisis: Arch. Int. Med., 102: 199-203, August 1958)

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Treatment of Idiopathic Thrombocytopenic Purpura

Ninety-three patients (28 males, 65 females), in whom the diagnosis of idiopathic thrombocytopenic purpura was satisfactorily established, form the basis of this article. Patients with thrombocytopenia associated with other hematological disorders or portal hypertension, or following the use

of drugs or other substances known to produce platelet deficiency, have been excluded.

All patients had hemorrhagic manifestations and less than 100,000 platelets per c. mm. of blood on at least two occasions. Eighty-five patients had a prolonged bleeding-time, and of 70 in whom it was estimated, 58 had an increased capillary fragility. Smears of bone marrow were examined in 44 cases. In all, the number of megakaryocytes was normal or increased and no abnormality of the red cells or white cells was seen. In no case, was the spleen palpable; the weight of spleens removed surgically ranged from 50 g. to 230 g. (average 120 g., which is within the limits of normal).

Idiopathic thrombocytopenic purpura may present without previous warning as an episode of mild or moderate bleeding into the skin and from mucous membranes or as an illness which is serious either because of the degree of blood loss or—as in intracranial hemorrhage—because the site of bleeding is particularly dangerous. It is recognized that even when no specific treatment is given, spontaneous recovery can occur. However, serious symptoms may supervene even in mild cases at any time and especially in the first few days of the disease. Four patients in the present series had intracranial hemorrhage and died within two days of first being seen. The results of steroid therapy in the short-history cases suggest that these drugs do no more than facilitate the natural tendency of this disease to spontaneous remission and possibly accelerate its onset. Evidence about the place of splenectomy in the severely ill patient with a short history is equivocal.

On the other hand, there is convincing evidence of the beneficial effect of splenectomy once the acute hemorrhagic phase has passed. Symptoms were immediately relieved, the bleeding-time was shortened, and the platelet count rose in 13 of the 14 patients of whom full records were kept. Improvement persisted in at least 75% of cases followed up for more than 12 years after operation.

Results suggest that the initial management of the patient with a short history of purpura should be blood transfusion to replace any serious blood loss and administration of cortisone (75 mg. every 6 hours) or prednisolone (15 mg. every 6 hours) for 3 weeks. If the platelet count rises during this time, there is a very good chance that it will be maintained. If there is no improvement within 3 weeks, splenectomy should be performed in the expectation that at this time it will be followed by a good result in 75% of the cases. The authors adduced no evidence to show that the patient in the acute hemorrhagic phase is benefited by splenectomy.

Patients with a long history of relapsing purpura should also be given a 3-week course of steroid therapy. About half of all patients improved during, or shortly after, treatment, but it is evidently exceptional for any such remission to last for more than 60 days. Therefore, it seems that all such patients should be submitted to splenectomy either during the steroid-induced remission or as soon as it is apparent that the treatment has failed.

to influence the platelet count. However, when a remission does occur, it may be justifiable to defer operation in milder cases, especially if it is a response to the first course of steroid treatment. Delay in these circumstances is probably harmless, provided the patient is able to report frequently for hematological examination so that the impending relapse can be anticipated and a further course of steroid therapy given as a preliminary to splenectomy. The chances of a permanent remission following splenectomy in this group of patients—although less than in those with a short history—were still in the region of 50% up to 20 years after operation.

The management of the patient who continues to have severe symptoms after splenectomy is difficult. Long continued treatment with cortisone (75-100 mg. per day) or prednisolone (10-15 mg. per day) was given to five such patients in this series (and in higher doses to another operated on more recently) without any significant improvement in platelet counts or in the severity of symptoms. In contrast to these results, 2 of 4 patients who had failed to respond to splenectomy were treated by the Medical Research Council Hematology Panel (1955) with cortisone (50-100 mg. daily) for more than 6 months and were maintained in remission for that time. The details of these cases were not given and it may be that the two who were maintained had short histories and might, therefore, have remained well once a remission had been obtained. Among other reports in the literature, the authors failed to find an example of a patient with a long history of purpura having had a steroid-induced remission lasting more than 2 months.

The results of steroid therapy in patients who relapsed after splenectomy suggest that, if there is going to be improvement, it will be evident within 3 or 4 weeks of the start of treatment and will almost certainly not be maintained for much more than 2 months. If the platelet count has not risen within this time, it is unlikely to do so with further continuous treatment, no matter how intense or how long continued. It is better to stop treatment, accepting any minor clinical improvement that may have occurred, and to start another course should bleeding recur. Whenever a minor operation or dental extraction is necessary in a patient with a persistently low platelet count after splenectomy, it should be covered by a course of prednisolone starting 4 or 5 days before operation and lasting not less than 10 days. (Watson-Williams, E. J., Macpherson, A. I. S., Sir Stanley Davidson, The Treatment of Idiopathic Thrombocytopenic Purpura - A Review of Ninety-Three Cases: *The Lancet*, Vol. 2 for 1958: 221-226, 2 August 1958)

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Policy

The U. S. Navy Medical News Letter, is basically an official Medical Department publication inviting the attention of officers of the Medical Department of the Regular Navy and Naval Reserve to timely up-to-date

items of official and professional interest relative to medicine, dentistry, and allied sciences. The amount of information used is only that necessary to inform adequately officers of the Medical Department of the existence and source of such information. The items used are neither intended to be, nor are they, susceptible to use by any officer as a substitute for any item or article in its original form. All readers of the News Letter are urged to obtain the original of those items of particular interest to the individual.

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Hazards in the Handling of Hydrogen Peroxide

According to the Hygienic Guide published by the American Industrial Hygiene Association, the maximum 8-hour exposure to 90% hydrogen peroxide is one part per million of vapor or mist per million parts of air by volume. However, it is believed that further industrial experience is needed to confirm this figure.

Hydrogen peroxide, 90%, the present standard commercial concentration, is a liquid at room temperature that is essentially odorless, but it can produce sharp respiratory irritation.

While health hazard through inhalation is moderate, skin and eye contact with the liquid produces severe reaction. It causes skin to become thickened, and bleaching and loss of hair occurs. Skin or eye contact with the liquid will produce tissue destruction, but the eyes do not appear to be damaged from exposure to the vapor.

Although the liquid does not have a fire hazard if kept out of contact with combustible material, it can ignite nearby flammable material.

Special procedures are required for storage and handling of 90% hydrogen peroxide. Workmen should wear protective clothing. Garments—both outer and inner—made of woven dacron fabric are eminently suitable. Dynel or saran fabrics are also usable. Impermeable aprons and the like may be made of polyvinyl chloride or polyethylene film. Gloves and boots should be made of either nitrile rubber, vinyl resin or Neoprene.

Goggles should be worn at all times when handling concentrated hydrogen peroxide. In case of spillage, the spot should be flushed immediately with water. If this flushing is done in time, it will prevent any vigorous reaction. Water is also the best extinguishing agent for fires that may result from spillage.

Hydrogen peroxide is used industrially in high energy fuels, as an organic oxidant bleaching agent, and in lesser concentration for pharmaceutical preparations. (Hazards in the Handling of Hydrogen Peroxide: Air Cond. Heat. & Vent., 54: 71, November 1957) (OccMedDispDiv, BuMed)

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Occupational Aspects of Habituating Drugs

There is convincing evidence from clinical experience that any nervous system depressant or stimulant can be classified as a habituating drug. Addiction involves two distinct clinical problems: dependence on chemicals rather than on latent resources, and physiological changes resulting from the toxic effects of the chemical. Alcohol presents by far the most serious problem; next in order are the sedatives and tranquilizers. Most addicts to barbiturates and tranquilizers were formerly addicted to alcohol. Narcotics present a minor problem. Addiction to the nervous system stimulants also occurs to an unknown extent. The estimated loss to industry from alcoholism is one billion dollars annually; 1% of this sum could well be spent by industry for research on problems connected with alcoholism and drug addiction.

Attempts to place the whole responsibility for the excessive use of nervous system depressants on the alcoholic beverage industries are only indicative of ignorance of the over all problem and the futile attempts, thus far, to cope with it. When basic research into addiction is in keeping with the size of the problem, then—and then only—will be the time for positive action leading to educational programs and clinical procedures which can institute prevention. (Bell, R. G., Problems Resulting from the Use of Habituating Drugs in Industry - The Problem within Industry: Am. J. Pub. Health, 48: 585-589, May 1958; abstracted in Indust. Hyg. Digest, 22:11, June 1958) (OccMedDispDiv, BuMed)

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Mouth-to-Mouth Versus Manual
Artificial Respiration

Detailed comparative studies of mouth-to-mouth breathing and manual artificial respiration have been performed on temporarily apneic, unconscious infants, small children, and adults.

Mouth-to-mouth breathing assures adequate ventilation in all cases. With the manual push-pull methods and manual rocking, complete obstruction of the airway has occurred in a significant number of subjects and partial airway obstruction was noted in all of the other cases.

The single most important factor in assuring adequacy of ventilation is proper extension of the neck and elevation of the jaw. The most useful technique for performing mouth-to-mouth breathing in infants and small children involves a specific series of actions. This is also true of the best techniques for performing direct mouth-to-mouth and mouth-to-nose resuscitation of adults. (Gordon, A. S., et al., Mouth-to-Mouth Versus Manual Artificial Respiration for Children and Adults: J. A. M. A., 167: 320-328, May 17, 1958)

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Atypical Heat Stroke

Three fatal cases of atypical heat stroke which occurred in unseasoned recruits who started training during summer months at a military installation near San Antonio, Texas, are described.

Instead of the dramatically abrupt onset of cerebral symptoms associated with a rectal temperature of 106° F. or above which is the typical picture of heat stroke, the cases studied by these authors exhibited gradual onset of symptoms over periods up to four days and at no time did the body temperature exceed 106° F. When first seen at sick call, the presenting symptoms were those of mild heat illness and the cases were treated as outpatients with fluids and salt tablets.

On return visits from several hours up to three days, changes in behavior were noted. These were characterized by combativeness, confusion, and disorientation. Two were initially hospitalized with psychiatric diagnoses before the underlying disorder became evident. In all three cases, the dominating clinical picture soon after admission was that of circulatory shock associated with failure of renal function. Although hyperthermia of moderate degree (101°, 102.6°; and 106° F.) was noted soon after admission in each case, therapy was directed principally toward restoring adequate circulation. To this end, intravenous fluids, including plasma expanders and whole blood, were given together with vasopressor agents and hydrocortisone. Attempts to reduce body temperature were limited to alcohol sponging and fanning. This type of treatment proved ineffective and hyperthermia of varying degree persisted until the end. In two cases, recurrent shock and persistent oliguria characterized the clinical course. In one case, the blood pressure was restored and well maintained, but renal function did not recover.

Serious disorders of salt, water, and acid-base balance were evident from blood studies on the first hospital day, which revealed markedly depleted alkali reserve. On the second hospital day, serum potassium and non-protein nitrogen began to rise with further decrease in available base. Associated with the hyperkalemia were ECG signs of potassium intoxication.

In an attempt to reduce the concentration of circulating potassium, hemodialysis was employed in two cases and administration of cation-exchange resin by rectum in the third.

Restitution of the normal blood electrolyte pattern was only partially achieved by these measures and this partial recovery was temporary. On the third hospital day, hyperkalemia of even more marked degree was again present (9.5, 8.5, and 6.9 mEq/L). Associated clinical signs of potassium intoxication recurred. Acidosis became severe. Emergency measures to prolong survival were unsuccessful, two cases dying during the third hospital day and the remaining case on the fourth day. The most significant pathological finding revealed during autopsy was that of renal tubular degeneration with the distal tubules filled with casts.

In analyzing these cases, the authors emphasize the importance which the uncorrected hyperthermia played as a contributing factor in the fulminating potassium intoxication which they consider as the immediate cause of death. Cellular damage from hypoxia associated with shock and potassium loss from cells resulting from severe acidosis were related causes of the rapid rise in serum potassium concentration observed on the second and third hospital day.

The authors conclude that efforts to restore adequate circulation and kidney function by fluid replacement are relatively ineffective in the presence of persistent hyperthermia. Moreover, use of vasopressor agents are contraindicated in heat stroke because these interfere with dissipation of body heat.

Finally, in preventing atypical heat stroke, all cases of mild heat illness which fail to respond to usual therapy within 24 hours should be hospitalized for careful study of thermoregulatory mechanisms, circulation, and water and electrolyte balance. (Baxter, C. R., Teschan, F. E., Atypical Heat Stroke with Hypernatremia, Acute Renal Failure, and Fulminating Potassium Intoxication: Arch. Indust. Med., 101: 1040-1050, June 1958) (Thermal Stress Branch, OccMedDispDiv, BuMed)

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New Film Release

The Bureau of Medicine and Surgery announces the release of a new official training film entitled Color Vision Deficiency: Definition and Evaluation (MN-8246) which will be of immediate interest to all Medical Department personnel who are concerned with color perception in the military service.

This 16-mm. film is 20 minutes long, has both narration and dialogue, and is in color. Its main objective is to give an understanding of color vision and the importance of color discrimination in the military services. The picture offers answers to the following questions: What constitutes an adequate degree of color perception for special military jobs? What is the difference in the vision of color-deficient persons known as protans and deutans? What colors are actually confused by persons with each type of color-vision deficiency? What are the practical limitations and consequences of defective color perception?

The film uses some striking devices to accomplish its purpose. A "color map" prepared especially for this production defines the kinds of color deficiency and demonstrates the colors that are confused by each type of color-deficient person. A sequence of scenes in a vividly decorated room demonstrates the degrees of color deficiency in a manner that is at once practical and dramatic. Then the film shows the military application of these facts: how, for example, the different degrees of deficiency can affect

a man's ability to distinguish between port and starboard running lights; and how a mild, moderate, or severe deficiency can variously affect a corpsman's ability to differentiate microorganisms in laboratory examination.

In addition to the information just described, the film demonstrates the two methods used by the Navy for color-vision testing: the use of pseudo-isochromatic plates, and of the Farnsworth Lantern. Operators show in detail how to set up and light the area for each test and how to administer, score, and record.

It is expected that medical officers will find this film most useful in preparing personnel-selection officers, hospital corpsmen, and all others charged with examination and assignment of personnel on the basis of color-vision tests.

CDR Dean Farnsworth MSC USN, inventor of the Farnsworth Lantern, and Miss Helen Paulson, both of the Naval Medical Research Laboratory at New London, served as associate technical advisors on this project. Mr. John Verges, also of NMRL, prepared much of the original art work. Personnel of the U. S. Naval Submarine Base at New London, the U. S. Naval Shipyard and the Receiving Station at Brooklyn, N. Y., Floyd Bennett Air Base, N. Y., and the U. S. Naval Hospital, St. Albans, Long Island, N. Y., performed as members of the cast. Special acknowledgment is due to Mr. Ralph Evans, head of the Color Control Department of Eastmen Kodak Company, Rochester, N. Y., for research and development of the technique used in showing the various degrees of color-vision deficiency.

Prints are being distributed to Naval Hospitals, Hospital Corps Schools, special naval medical schools, District Training Aids Sections and Libraries, Naval Aviation libraries and Marine Corps training film libraries. If a print is not available from your usual source, address inquiry to the Film Distribution Unit, Training Division, Bureau of Naval Personnel, Department of the Navy, Washington 25, D. C. (Audio-Visual Training, BuMed)

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From the Note Book

1. Attention All Hands: Readers of the News Letter are again reminded that the items printed, except those obviously official, reflect the opinions and beliefs of the author or authors and do not reflect the opinion or attitude of the Bureau of Medicine and Surgery or the Department of the Navy.

Editor

2. The Bureau of Medicine and Surgery celebrated its 116th anniversary on August 31, 1958, the only Bureau which still retains its original name as established by Congress in 1842. The history and traditions of the Navy Medical Department, however, began with the history of our country. Since

the days of the first Surgeons and Surgeon's Mates in the Colonial Navy, 116 years ago, the Medical Department and its personnel have achieved a history of which they can be justly proud. Through improved techniques, equipment, supplies and facilities, personnel, training qualifications, and organization, their record of improving and maintaining the health of the Navy and of the Nation is one of continued progress. (TIO, BuMed)

3. An Armed Forces Institute of Pathology exhibit depicting the role of the Armed Services in the fight against tropical diseases will be shown in Lisbon, Portugal, at the Sixth International Congresses on Tropical Medicine and Malaria, 5 - 13 September 1958. The exhibit, "Contributions of the United States Armed Services to the Control of Tropical Disease," consists of four panels of photographs, charts, maps, and color transparencies. (A.F.I.P.)
4. The significance of tetanus in the U. S. today is presented. Between 500 and 600 people die each year of the disease. A plea is made for much greater use of tetanus toxoid in active immunization to prevent the needless loss of time and life from either the disease or a now outmoded method of prophylaxis against the disease. (Surg. Gynec. & Obst., August 1958; C. D. Sherman, Jr. M. D., D. H. Barnhouse, M. D.)
5. Proper diagnosis is extremely important when dentures are planned and posterior occlusion determined. The responsibility for denture planning belongs to the dentist alone. A denture is more than a piece of hardware; it will always need to be a physiological restoration. (J. A. D. A., August 1958; S. H. Payne, D. D. S.)
6. In a 7-year period in a community hospital, 153 patients with upper gastrointestinal bleeding were hospitalized and treated. Of these, 143 were classified as bleeding ulcer. This group was divided into 82 cases of proved ulcer, 34 of presumed ulcer, and 27 of suspected ulcer. These cases have been subjected to statistical analysis and the authors' preference in the management of this type of case is presented. (Arch. Surg., August 1958; J. P. Chandler, M. D., R. R. Santos, M. D.)
7. The anesthetic problems and management of 200 patients who have undergone cardiopulmonary bypass for intracardiac surgery, using low flow perfusion with a bubble oxygenator, are reviewed. (Anesthesiology, July - August 1958; A. S. Keats, M. D., et al)
8. Wegener's granulomatosis is an uncommon syndrome in which giant-cell granulomata in the respiratory tract occur together with granulomatous and vascular lesions resembling those in polyarteritis nodosa. This article, based on a study of 10 cases and 46 others selected from the literature, describes

and tabulates the clinical and pathological features (Brit. M. J., 2 August 1958; E. W. Walton, M. D.)

9. Two surgical approaches to the popliteal artery, the medial and the posterior, are described. The posterior approach has its greatest applicability in the surgical treatment of popliteal aneurysms. (Am. J. Surg., August 1958; F. M. Binkley, M. D., E. J. Wylie, M. D.)

10. Arteriography in neoplasms of the extremities is discussed in Am. J. Roentgenol., August 1958; A. R. Margulis, M. D., T. O. Murphy, M. D.

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BUMED INSTRUCTION 6230.8C

31 July 1958

From: Chief, Bureau of Medicine and Surgery
To: All Ships and Stations

Subj: Poliomyelitis vaccine; use of

Ref: (a) BuMedInst 6230.1A, Subj: Immunization requirements and procedures
(b) BuMedInst 6310.4, Subj: Morbidity Report, NavMed-1390 (Med-6310-2); and Special Epidemiological Reports (Med-6200-2 (Notal))

This instruction promulgates Department of Defense policy and revises instructions in regard to the use of poliomyelitis vaccine. BuMed Instruction 6230.8B is canceled.

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BUMED INSTRUCTION 6250.6

6 August 1958

From: Chief, Bureau of Medicine and Surgery
To: Naval Hospitals and Medical Centers

Subj: Pest control at naval hospitals

Ref: (a) BuMedInst 6250.5, Subj: Insect and rodent control
(b) BuMedInst 6250.4, Subj: Pest control; vector and economic

Encl: (1) Guidelines for Pest Control in Naval Hospitals

This instruction provides guidelines for the effective control of insects, rodents, and other pests at naval hospitals.

DENTAL

SECTION

NDS Short Graduate Courses 1958 - 1959

The U. S. Naval Dental School, National Naval Medical Center, Bethesda, Md., will present a series of fourteen short postgraduate and refresh-er courses in nine subjects to career Dental officers of the Armed Forces during Fiscal Year 1959. This is the second series of short courses to be presented by the Dental School in the program initiated in 1957. Details regarding quotas and eligibility will be published at a later date. Courses to be presented and schedules are:

| <u>Courses</u> | <u>Dates</u> |
|------------------------|----------------------|
| Endodontics | Oct 13-17, 1958 |
| Oral Surgery | Nov 17-21, 1958 |
| Oral Pathology | Dec 1-5, 1958 |
| Partial Dentures | Jan 12-16, 1959 |
| Periodontics | Mar 2-6, 1959 |
| High Speed Orientation | Mar 16-20, 1959 |
| Casualty Care | Apr 13-17, 1959 |
| Crown and Bridge | Apr 20-24, 1959 |
| Complete Dentures | May 18-22, 1959 |
| | Oct 20-24, 1958 |
| | Apr 13-17, 1959 |
| | Mar 9-13, 1959 |
| | ----- |
| | May 4-8, 1959 |
| | Apr 27 - May 1, 1959 |
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Training in Casualty Treatment

During Fiscal Year 1958, the training of dental personnel in casualty treatment procedures was conducted at the U. S. Naval Dental School, National Naval Medical Center, Bethesda, Md.; U. S. Naval Dental Clinic, Naval Base, Norfolk, Va.; and U. S. Naval Training Centers at San Diego, Calif., Great Lakes, Ill., and Bainbridge, Md. Approximately three hundred Navy Dental officers completed this course during this period. In addition, the U. S. Naval Dental Clinic, Norfolk, Va., trained approximately two hundred and fifty other personnel in conjunction with the Navy-wide First Aid and Self Aid Program. Instructors of the Navy Dental Clinic also assisted in the Disaster First Aid Program in the junior and senior high schools of Norfolk

by demonstrating the casualty treatment manikin and other aids before fourteen thousand boys and girls during a 2-week period.

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BuMed Notice 6620 - Dental Appointment Card

This notice advises that a dental appointment card has been standardized and described as "Dental Appointment, NavMed 1379." The new appointment form will be used in lieu of the various types of dental appointment card now being used throughout the Navy and Marine Corps.

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RESERVE SECTION

Credit for Attending Professional Meeting

The American Academy of Dermatology and Syphilology will conduct its 17th annual meeting at the Palmer House, Chicago, Ill., during 6-11 December 1958. The Chief of Naval Personnel has authorized one (1) retirement point credit to eligible inactive Naval Reserve Medical Corps officers for daily attendance, provided they register daily with the military representative present.

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Available Naval War College Publication

Inactive Naval Reserve Medical Department officers, LCDR and above, not on the Inactive Status List, are eligible to receive, gratis, the Naval War College Review upon individual request addressed to:

Head, Correspondence Courses Department
Naval War College
Newport, Rhode Island

The Naval War College Review was established in 1948 under the title, "Information Service for Officers." The present title was assumed in 1952. The purpose is to publish for the benefit of officers of the Armed Forces selected material that has been presented to resident students of the Naval War College. It is published in 10 issues per academic year, commencing in September and ending in June.

In making application, Reservists should include their grade, service and designator, and include the statement, "eligible in accordance with category (b) of paragraph 5, BuPers Instruction 1552.5A;" also add whether the subscription is new or a renewal. Subscriptions are effective for one academic year only and those desiring renewal must resubscribe by using the printed form that is available in each year's June issue.

Note: To insure receipt of early issues, applications should reach the Naval War College as soon as possible.

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Special Pay Scale for Certain Junior Officers

The new military pay law provides that commissioned officers in the grades of ENS (0-1), LTJG (0-2), and LT (0-3) who have been credited with more than four years' active service as enlisted members will have their basic pay computed on a special pay table. If you qualify under this provision, here's what you should do:

If you are currently associated with a Naval Reserve Program in a pay status, notify your commanding officer immediately—in writing—that you claim more than four years' active enlisted service. Your CO will then take all the necessary follow-up action.

When you request active duty for training (AcDuTra) with pay, be sure to include in your request a statement that you claim more than four years' active enlisted service.

If you are not in either category, you need take no action until you become associated in a pay status with a Naval Reserve Program or request AcDuTra with pay. At that time, proceed as outlined above. (The Naval Reservist, July 1958)

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Medical Symposia in Special Weapons

Two 4-day courses in the medical aspects of atomic weapons' effects are scheduled for presentation at the Field Command, Armed Forces Special Weapons Project, Sandia Base, Albuquerque, N. M., during the periods 3-7 Nov 1958 and 16-20 Mar 1959.

The courses are intended to present the latest information on special weapons and the medical effects on man and material.

Eligible are: Senior inactive Naval Reserve Medical Corps officers whose probable mobilization assignment would be to a fleet staff or major base in the theater of operation. Quotas have been allocated to Commandants

of the Eighth, Ninth, Eleventh and Twelfth Naval Districts. TOP SECRET security clearance is required and nominations from Commandants must reach the Bureau of Medicine and Surgery (Code 362) at least 60 days in advance of the convening dates.

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PREVENTIVE MEDICINE SECTION

Foods in Vending Machines

The brave new world of prepackaged food, hot meals from coin-operated vending machines, and other mechanical approaches to the storage and distribution of human nutriment is here. Health officials must evaluate the possible bearing of these developments upon nutrition and sanitation with a view to encouraging favorable developments and preventing those that may have unfavorable effects on health.

Where operators of processing plants become conscious of their responsibility to protect the consumer's health, there is increased incentive for competing suppliers of packaging materials and machines to consider sanitation and health protection.

Improvements in methods of vending foods have been greatly implemented by improved packaging as well as by improved sanitation in containers and mechanisms for vending foods and drinks. Health officials who admit concern over the handling of foods in public eating and drinking establishments should be equally concerned not only about the dispensing mechanisms—whether manually or coin operated—but over the sanitary safeguards established in the preparation, handling, and storage of the food or drink to be vended.

A considerable interest in the possible health and sanitation hazards in this field was created by work of the Subcommittee on Food Sanitation of the Committee on Sanitary Engineering and Environment, National Research Council, and by investigations started some years ago under sponsorship of the Armed Forces Epidemiological Board. More recently, the Armed Forces placed responsibility upon the manufacturer desiring to place machines in canteens to present satisfactory evidence of the successful testing of each

device in a disinterested and nationally recognized laboratory. Much testing has been done by the National Sanitation Foundation Testing Laboratory, and some coin-operated vending machines now are available that bear its seal of approval as evidence of compliance with good practices in sanitation. Other laboratories are reported to be doing similar testing.

The Public Health Service also has worked with the industry in establishing a recommended code for coin-operated vending machines. Compliance with the requirements of this code is being used by the National Sanitation Foundation Testing Laboratory as one of the necessary requirements for approval.

With the evaluation of new machines by sanitarians before they are placed in production, the employment of well trained men to service the machines, and occasional inspection by health department field men, food-vending machines can be operated satisfactorily. (Tiedeman, W. D., Implications of New Developments in Food and Milk Processing, Packaging, Storing, and Vending: Am. J. Pub. Health, 48: 854-860, July 1958)

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Revision of International Travel Immunization Information

Immunization Information for International Travel, the Public Health Service Publication No. 384, June 1956, which is under complete revision by the Foreign Quarantine Division, Public Health Service, Department of Health, Education, and Welfare, is expected to be released by 1 September 1958. This revision will incorporate the Supplement, February 1957 and all changes made in Public Health Service and international immunization requirements and the designated yellow fever vaccination centers since June 1956. Medical officers having a 1956 edition of this booklet may obtain revised copies by letter request to the Bureau of Medicine and Surgery (Attention: Code 72) or from the local Public Health Service office.

The International Certificates of Vaccination, PHS 731, as approved by the World Health Organization, were revised in January 1957 to include the changes made in the Section, "International Certificate of Vaccination or Revaccination against Smallpox," at the 9th World Health Organization Assembly, 1956. This certificate is used only for dependents and civilians traveling overseas under Armed Forces cognizance in accordance with BuMed Instruction 6230.1A, Immunization Requirements and Procedures, and is valid when certified by a military medical officer or Public Health Service officer, and when it carries the approved official seal or stamp of the Department of Defense or Public Health Service.

Although this new certificate has been issued to Navy supply depots, it has been brought to the attention of the Bureau of Medicine and Surgery that

individuals appear with the old certificate, PHS 731 (Revised 1952), which is no longer valid except when the vaccinations recorded thereon have not reached the expiration date. (Communicable Disease Branch, PrevMedDiv, BuMed)

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Recent Advances in the Study of Venereal Diseases

The Ninth Annual Symposium on Recent Advances in the Study of Venereal Diseases and the Venereal Disease Control Seminar for Public Health Regions I, II, and V, sponsored by Public Health Service, Department of Health, Education, and Welfare, was held in Philadelphia, Pa., 12-15 May 1958. Articles were presented on both the clinical and laboratory aspects of syphilis and gonorrhea. The following summary report was submitted by LT William E. Carson MC USN, U.S. Naval Hospital, Philadelphia, who attended these meetings as representative of the Bureau of Medicine and Surgery.

Although much research is being done on syphilis and gonorrhea, better methods of diagnosis and treatment are needed. The greatest diagnostic problem lies in differentiating latent syphilis from biologic false positive reaction. While there is no serologic test that is specific for diagnosing syphilis, the treponemal tests are of great value. The Reiter Protein Complement Fixation Test (RPCF) holds promise of becoming a fairly inexpensive test with a moderate degree of sensitivity and specificity. The Treponema Pallidum Complement Fixation Test (TPCF) may be used as a screening test utilizing the technically more difficult Treponema Pallidum Immobilization Test (TPI) when the result of the TPCF is inconclusive. Although the TPI is less sensitive, it has a greater degree of specificity and is the test by which other treponemal tests are compared.

Because of the increasing problem of sensitivity to penicillin, various broad spectrum antibiotics have been used in the treatment of syphilis. Erythromycin, in a total dose of 10 gm., was used in one small series, but the follow-up was too short for adequate evaluation. In another study, carbomycin was used in a total dose of 21 gm. given over a period of 10 days; the 5-year follow-up studies showed good results. Other broad spectrum antibiotics in comparable dosage schedules have been used with good results, but penicillin still remains the drug of choice in treating syphilis.

Gonorrhea is a very important problem in the venereal disease picture. Studies with fluorescein-labelled antibodies indicate that this laboratory method may be of value in the future in the diagnosis of gonorrhea.

Accurate diagnosis is exceedingly difficult, especially in the female. Treatment of the acute disease in the male is easily accomplished by relatively small doses of antibiotics, but this is not so in the female. To increase the cure rate and reduce the number of reinfections, antibiotic quarantine has been established by the public health departments of several venereal disease clinics. A single injection is given with a mixture of 600,000 units of aqueous procaine penicillin G plus 1.2 million units of benzathine penicillin G which provides protection against reinfection for 8 weeks. The addition of 600,000 units of aqueous procaine penicillin G is superior to 1.2 million units of benzathine penicillin G alone; dihydrostreptomycin in doses of 1 gm. daily gives excellent results in acute gonorrhea; the sulfa drugs—particularly some of the newer ones—are of value in treating acute gonorrhea; and all broad spectrum antibiotics are effective.

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Pulmonary Diseases Associated with Atypical Acid-Fast Bacilli

Atypical acid-fast bacilli are being reported more frequently in diagnostic microbiology. The ultimate classification and significance of these organisms is still to be determined, therefore, a coordinated investigation of the problem is indicated.

Traditionally, in diagnostic microbiology the acid-fast bacilli have been classified as either pathogens or saprophytes. However, with more general use of culture procedures, there have been an increasing number of cases yielding acid-fast bacilli which had neither the typical characteristics of the known pathogens nor of the rapidly growing saprophytes. This group of unclassified bacilli has been given the temporary descriptive designation of atypical acid-fast bacilli pending agreement on definitive classification and appropriate designation.

During two years of research (1955-1957), through consolidated efforts of tuberculosis hospital, bacteriological and clinical laboratories, and public health laboratories in Florida, atypical acid-fast bacilli were isolated from 108 individuals with pulmonary disease; 36 were found in the first year, 72 in the second. During the second year, the first isolation from 22 of the cases was from sputum specimens submitted to public health laboratories; others were found through examination in a clinical pathological laboratory.

Early in this study, these organisms were identified in only one laboratory. As the characteristics of these agents became known to other laboratory workers, the extent of detection increased, suggesting a beginning discovery rather than a beginning occurrence. Some of the organisms now identified as atypical acid-fast bacilli were reported heretofore in part as

M. tuberculosis and in part dismissed as unimportant saprophytes—actions which need to be avoided in view of accumulating knowledge. It is not evident to what extent the increasing detection of these infections represents a true increase in their occurrence.

The usual observations on cultures for acid-fast bacilli were not adequate to readily identify these atypical organisms, however, all grew at room temperature, thus differentiating them from *M. tuberculosis*. Three types of atypical strains, photochromogens, nonphotochromogens, and scotochromogens can be identified on the basis of light conditioned and nonlight conditioned pigment formation.

The simplest supplementary test was the catalase reaction. Of 75 atypical strains isolated from hospitalized patients, there was a strongly positive catalase reaction in 72. Only in three was there a weak reaction which would correspond to the reaction given by H37Rv strain of *M. tuberculosis*.

Prior to the initiation of chemotherapy in individual cases, *M. tuberculosis* with few exceptions was found by in vitro tests to be susceptible to streptomycin, para-aminosalicylic acid (PAS), and isoniazid. In contrast, most of the atypical strains under study were highly or partially resistant to PAS and isoniazid, although somewhat more susceptible to streptomycin. Recent in vitro tests of 20 atypical strains against promine, streptovaracin, and cycloserine were more encouraging.

In this 2-year period in which there was a progressive increase in the technical reliability in the detection of these atypical organisms, they were found in 87 hospitalized cases. This represents approximately 3% of all hospitalized patients. Based on total admissions, the approximate proportion of cases found positive in white males was 6%, in white females 3%, in Negro patients 1%.

There were no clinical findings in these cases to differentiate from infections due to *M. tuberculosis*. The history and physical and radiological findings in patients from whom only atypical acid-fast organisms were isolated repeatedly were those of tuberculosis. These atypical organisms were found chiefly in those with moderately or far advanced disease.

The tuberculin skin test (Intermediate purified protein derivative) (PPD) was negative in one-fifth of the patients tested. Tests using a crude tuberculin prepared from atypical mycobacteriae were tried, but with no conclusive finding.

The most striking clinical feature of these cases was the lack of favorable response to the standard antituberculosis drug therapy. Approximately half of the cases failed to have any favorable response to drug therapy as indicated by radiological changes. In vitro susceptibility tests support the clinical observations that other than the standard antituberculosis drug therapy needs to be tried in these infections.

No longer is it permissible to assume that acid-fast bacilli isolated from the sputum or gastric contents of suspected cases of tuberculosis may be

expected to be either *M. tuberculosis* or saprophytes. Current evidence indicates that between these familiar organisms there is a spectrum of acid-fast bacilli which may range from active human pathogens to harmless saprophytes. Of these, the photochromogens are acknowledged to be more highly pathogenic for man than they were found to be for mice. The scotochromes at the opposite extreme are the least pathogenic. The nonphotochromes vary in their pathogenicity for mice and presumably also for man. In the current state of limited knowledge, all these organisms need to be regarded with suspicion, particularly when isolated repeatedly and excreted in substantial numbers. Future studies must elucidate the factors in the host as well as differences in the type of the organism involved which determine the nature of the host-parasite relationships.

These findings call for long-range coordinated studies involving bacteriologists, epidemiologists, and clinicians. Further, the detailed nature of the required bacteriological examinations makes it desirable in the interest of efficiency and reliability to refer all suspected organisms to a specialized laboratory for detailed study. (Hardy, A. V., et al, Bacteriological and Epidemiological Studies of Pulmonary Diseases Associated with Atypical Acid-Fast Bacilli: Am J. Pub. Health, 48: 754-759, June 1958)

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